

# RELATION BETWEEN LOCATION OF PLACENTA AND UMBILICAL LINE HEMATOCRIT

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## **Abstract:**

**Background:** Placenta Previa (PP) is characterized as the unusual implantation of placental tissue over or adjoining the inside cervical os. The commonness of PP is at around 5 for every 1000 pregnancies and it represents roughly 20% of all antepartum drain, front PP was seen as related with unfavorable maternal results including over the top blood misfortune, gigantic transfusion, placenta accreta and hysterectomy. This study aimed to decide the connection between the site of placenta in pregnant ladies and the hematocrit (Hct) estimation of umbilical rope blood (CB) of the newborn. **Patient and method:** This case-control study was carried out at obstetrics and Gynecology Department, Zagazig college Hospitals and El-Menshawey General Hospital in Tanta during the period from May 2018 to May 2019. including 32 pregnant ladies with various placental site were classified in to two groups; (group I) Women determined to have Placenta Previa as front or back placenta previa. And Women without Placenta Previa at a similar gestational age as (group II). Placenta position was classified as foremost, back and fundal placenta. **Result:** There was high huge distinction between hemoglobin levels when activity in the placenta previa gathering. Additionally there was high distinction between the placenta previa gathering and the control bunch as respect fetal haematocrite esteem which was higher among placenta previa gathering. As respect fetal hematocrite and placenta site our examination demonstrated that there was high solid critical connection between's the placental site and haematocrite esteem. **Conclusion:** Placental area can decide pregnancy out come.

**Keywords:** Placenta, Placenta Previa (PP), hematocrit, neonate.

## **I. Introduction:**

The placenta is a materno-fetal organ that begins to develop at blastocyte implantation and is transmitted during childbirth to the infant. Since the baby depends on the placenta for sustenance, the correct advancement of the placenta is crucial for addressing embryonic and foetal improvement, yet numerous other formatively basic capabilities. The placenta should develop rapidly at the same time as the foetus, to help sustain and manage

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the pregnancy. The placenta is a transient organ formed from the trophoctoderm of the blastocyst that is embedded. Maternal blood streams into the intervillous placental space, where solutes (supplements, oxygen) diffuse to the foetal flow over the shipping epithelium, while foetal metabolic waste items are expelled from poisons by the partition of courses regulating the transport of solutes and shielding the infant. This however, also shields the embryo from the unsusceptible maternal structure. Placenta also regulates maternal physiology through the production of hormones: human chorionic gonadotropin (hCG), human placental lactogen (hPL) and steroid hormone oestrogen and progesterone<sup>[1]</sup>.

Placenta Previa (PP) is characterised as an irregular implantation of the placental tissue over or adjacent to the inner cervical bone. PP is normal at around 5 per 1000 pregnancies and constitutes around 20 per cent of all antepartum drainage, front PP was shown to be correlated with unfavourable maternal outcomes like upper blood misfortune, gigantic transfusion, placenta acreta, and hysterectomy.<sup>[2]</sup>

It is estimated that 10% of all newborn children brought into the world have severe pallor after the previous placenta. In addition, Placenta previa is the most commonly known placental irregularity that induces neonatal illness[3]. In conjunction with pre-term birth, neonatal iron deficiency is at the heart of the 4–8% risk of perinatal mortality in placenta previous patients<sup>[3]</sup>.

Newborn haematological parameters are not quite the same as those of newborn children or adults, including contrasts as shown by the course of birth, rope cinching time, when blood tests are conducted (umbilical CB, venous blood, slim blood) as well as drawing time (2, 12 or 24 hours after birth), stable foetal conditions, and Hct estimation technique. Essential changes occur in the hematocrit from birth through the key stages of postnatal life. It rises not long after birth, topping at 2 hours of age, and decreases bit by bit after that. Extended hematocrit (Hct) is associated with blood hyper-thickness and decreased blood flow to critical tissues, particularly when hematocrits increase to more than 60 per cent<sup>[4]</sup>. The aim of our study was to determine the relation between the placenta site in pregnant women and the umbilical rope blood (CB) hatchling estimate of hematocrit (Hct).

## II. Patient and methods:

This case-control study was carried out at obstetrics and Gynecology Department, Zagazig college Hospitals and El-Menshawey General Hospital in Tanta during the period from May 2018 to May 2019. Including 32 pregnant ladies with various placental site. The study was approved by the research ethics committee of the Faculty of Medicine, Zagazig University, and written informed consent was obtained from all patients. The work was conducted for research involving humans according to the Code of Ethics (Helsinki Declaration) of the World Medical Association.

**Consideration criteria were:** women determined to have placenta previa as (bunch I) classified as front or back placenta previa, women without placenta previa at a similar gestational age as (bunch II), placenta position was classified as foremost, back and fundal placenta, neonates, Full term (37-multi week) with ordinary birth gauge (2.5-4.0 Kg). **Avoidance criteria were:** patients with different pregnancies, maternal foundational illness, complicated pregnancy, for example, Intrauterine development hindrance, fetal abnormality, little for gestational age, diabetes mellitus, cardiovascular, respiratory, anxious, Genitourinary ailments, and intense

disease or history of interminable incendiary were barred from the examination, patients prenatally determined to have placental Insertion peculiarities or umbilical line abnormalities were likewise prohibited, Avoidance criteria for the neonate were :strange partogram, perinatal blood misfortune, hydropsfetalis, birth aspxia, low apger score < 8 at 5 moment, evident innate or chromo-somal variations from the norm.

Diagnostic work-up included complete history taking, especially for [Menstrual history, Date of last menstrual period, Duration of the present pregnancy in weeks,Gravidity, equality, Mode of conveyance]. Obstetric inconveniences as pre eclampsia, antepartum drain. Medical as coronary illness diabetes frailty. Fetal inconveniences as death, twins, I.U.G.R, oddities.Preoprative maternal hemoglobin (Hgb) and Hct levels

All patients were set up for medical procedure in some other setting, and had preoperative assessment for the medical procedure wellness as standard research center examinations as pursues; CBC, liver and kidney capacity tests, coagulation profile, fasting and post prandial glucose, urine investigation.

All ladies experiencing a third trimester Ultrasound check for placental restriction was done. Scans were performed utilizing. (Medison CO\_LTD unit, Sonoace x4, Korea) utilized for ultrasonic assessment of the placenta. A detail outputs including check for placenta morphology was performed. All Patients with typical or irregular placental discoveries will have another output quickly prenatally. The placenta area was record it was named as foremost, back or fundal. Major placenta previa was analyzed when the placenta is covering the Internal cervical os either mostly or totally and spent 28 weeks Gestation. Placenta previa named total incomplete negligible and low lying further more it was delegated foremost placenta (characterized as placenta situated at the uterine cut site) or not the finding of placenta previa depended on ultrasonography and affirmed at cesarean conveyance. Figuring of gestational age was controlled by the last menstrual periods and first-trimester ultrasound.

#### **Method :**

All ladies determined to have Placenta Previa experienced cesarean area conveyance. At affirmation every patient had at least two units of cross-coordinated blood prepared for utilized. Patients who were conceded at or before 34 weeks growths got 6 mg of dexamethasone, 12 hourly for 48 hours. Mangement of PP is an elective cesarean area toward the fruition of (36-37 weeks' incubation). Conceivable mediation before the assumed date is legitimized in cases with over the top draining and indications of work crisis cesarean segment were performed. Maternal complexities that were surveyed incorporated the cesarean hysterectomies, inside and bladder wounds, number of units of blood transfused length of medical clinic remain and wound contaminations. The detailed fetal inconveniences were fetal demise, admission to NICU, and rashness.

All ladies without Placenta Previa at the mean gestational age as (bunch II). Experienced either ordinary vaginal conveyance or cesarean segment in view of Repeated caesarian segment, breech introduction, maternal genital herpes or Cephalopelvic disparity). Maternal inconveniences were surveyed.The infants were inspected by neonatologist and evaluated deliberately for the Presence of innate inconsistencies during childbirth, infant sex and Apgar score, birth weight, and necessity for neonatal escalated care. Following birth, and inside 15 seconds, two ml blood tests were gathered from the umbilical vein by a syringe, and after that filled test cylinder containing EDTA as an anticoagulant from following line clasp. At that point these cylinders moved to the research center as quickly as time permits. Maternal venous blood tests were taken before activity and at any rate

6 hours after conveyance. Complete blood tally parameters were estimated utilizing the Coulter LH-780 hematology blood analyzer (Beckman Coulter Inc. Brea, CA, USA).

### Statistical Analysis:

The data were coded, entered and processed on computer using SPSS. Mean, standard deviation, range, frequency, and percentage were use as descriptive statistics. P value was considered significant  $P \leq 0.05$ : Significant.

### III. Result:

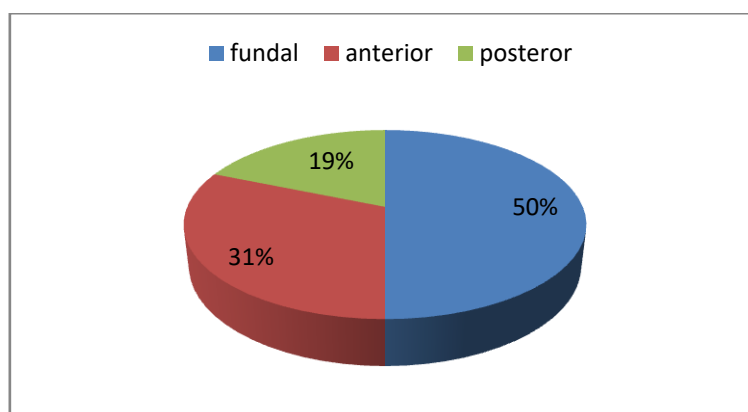
There was non-significant difference between the studied groups as regard demographic data. **Table (1)**

**Table (1): Studying of demographic data in between the studied groups:**

Variable	Low-lying Placenta group (n=16)	Upper placenta (Control) (n=16)	t-test	P value
Age: (Years):				
Mean ± SD	32.5±4.5	30.4±5.2	1.22	0.231
Range	(27-40)	(24-38)		(NS)
Number of C.S				
Median	1	2	MW	0.183
Range	(1-2)	(0-2)	95	(NS)
Gravidity				
Median	2	2	MW	0.534
Range	(1-4)	(1-5)	112	(NS)
Parity				
Median	1	2	MW	0.055
Range	(0-3)	(1-4)	79	(NS)

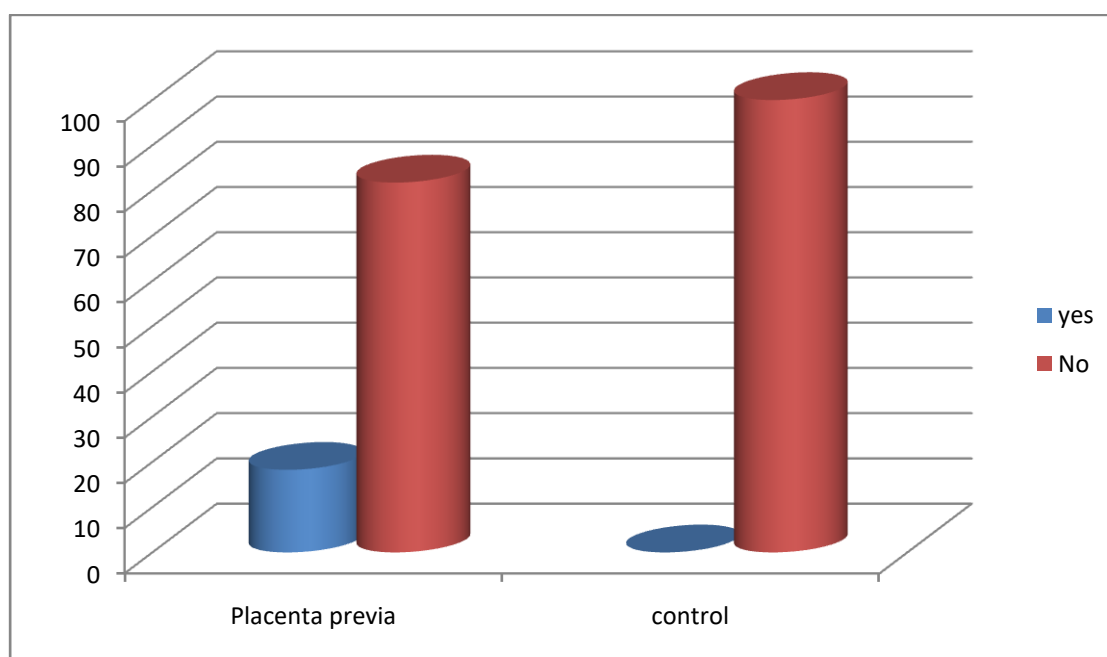
MW =Mann whitney test    P value is significant if  $<0.05$

This study showed that fundal placenta was in 50% cases, anterior 31.25% and posterior 18.75% of cases. **Figure (1)**



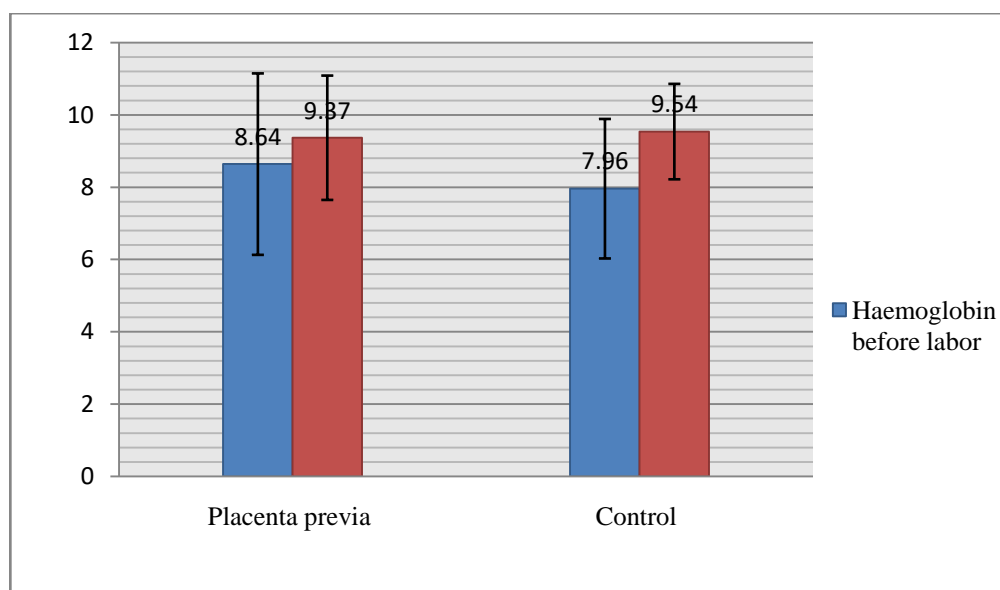
**Fig.(1): Distribution of controls according to placental location**

There was high significant difference between the two studied groups as regard birth weight. While there is no significant difference between the two studied groups as regard gestational age, NICU admission and Newborn gender.**Figure (2)**



**Fig. (2): NICU admission of the studied groups.**

There was significant difference between the studied groups as regard haemoglobin level before operation. Also there is high significant difference between the two studied groups as regard haemoglobin level after operation. **Figure(3)**



**Fig. (3): Maternal haemoglobin measures before and after labor in the studied groups.**

There was high significant difference between the placenta previa group and the control group as regard fetal haematocrite value. **Table (2)**

**Table (2): Relation between fetal haematocrite value and placental site:**

Variable	Placenta previa group (n=16)	Control (n=16)	t-test	P value
<b>Fetal haematocrite value%:</b>				
Mean $\pm$ SD	40.34 $\pm$ 5.166	34.39 $\pm$ 3.92	3.66	<0.001
Range	(29-46)	(29-41)		(HS)

There was no significant relation between placental site and fetal outcome. **Table (3)**

**Table (3): Relation between upper placental site and fetal outcome:**

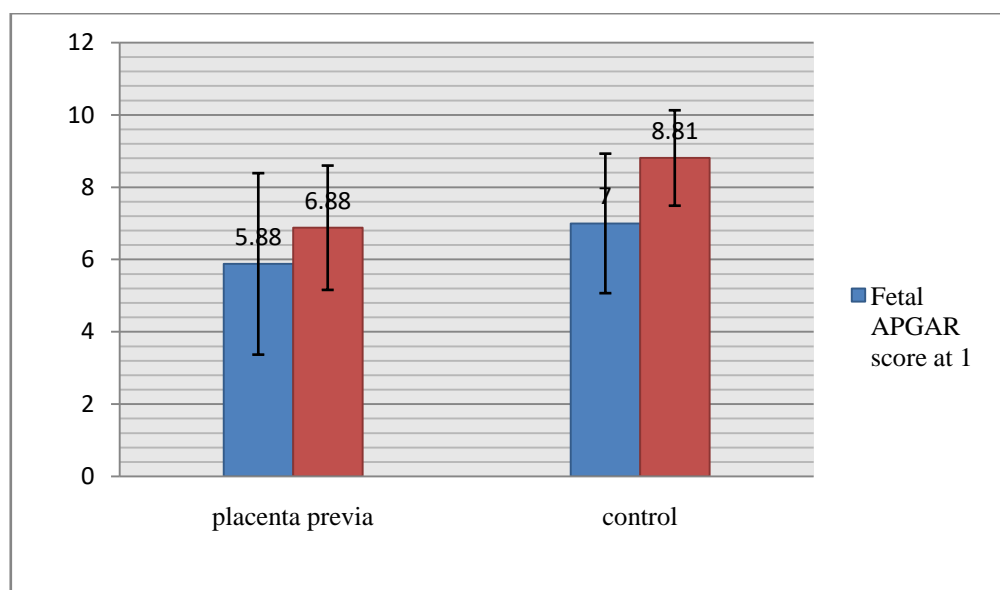
Variable	Fundal (n=8)	Anterior (n=5)	Posterior (n=3)	t-test	P value
<b>Birth weight: (kg)</b>					
Mean $\pm$ SD	3.56 $\pm$ 0.41	3.52 $\pm$ 0.384	3.46 $\pm$ 0.4	0.069	0.933

Range	(3-4)	(3-4)	(3-4)		
<b>APGAR score 1minute</b>					
Mean ± SD	7.3±1.1	7.2±1.5	7±1.55	0.057	0.944
Range	(3-9)	(3-9)	(3-9)		
<b>APGAR score 1minute</b>					
Mean ± SD	8.71±0.44	8.55±0.52	8.9±0.31	0.576	0.575
Range	(7-9)	(7-9)	(7-9)		

There was significant difference between the studied groups as regard APGAR score at one minute. While there was high significant difference between the studied groups as regard APGAR score at five minute **Table (4) Figure (4).**

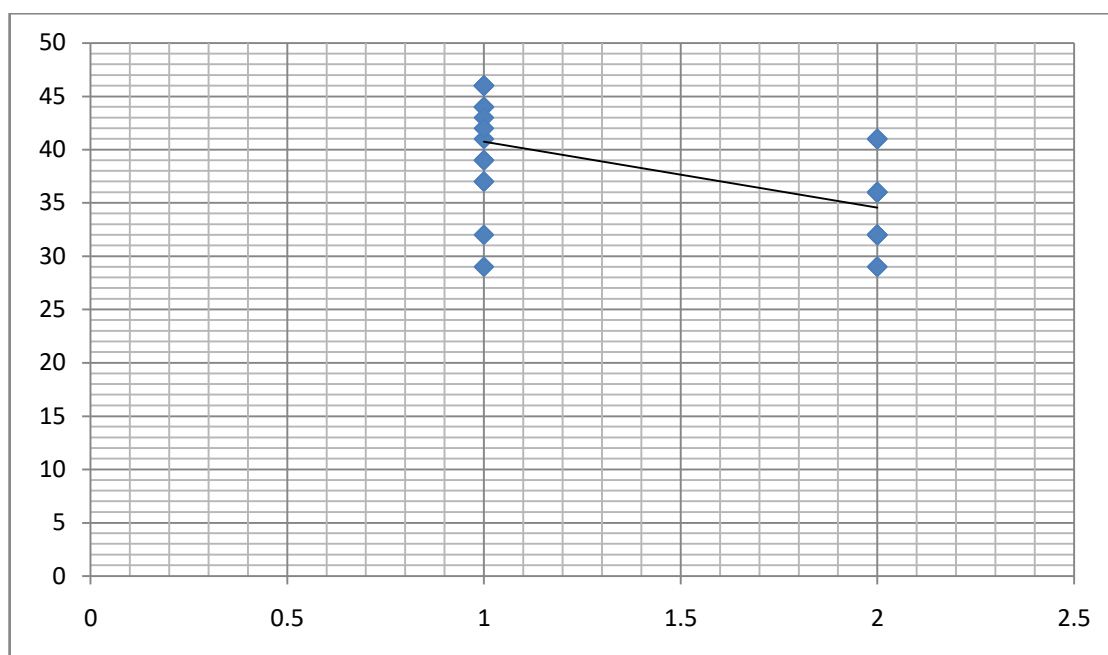
**Table (4): Fetal APGAR score at 1 , 5 minute of the studied groups:**

Variable	Placenta previa group (n=16)	Control (n=16)	t-test	P value
<b>APGAR score at 1 minute</b>				
Mean ± SD	5.88±1.3	7±1.5	2.25	<b>&lt;0.05</b>
Range	(3-8)	(3-9)		<b>(S)</b>
<b>APGAR score at 5 minute</b>				
Mean ± SD	6.88±1.5	8.81±0.54	4.85	<b>&lt;0.001</b>
Range	(5-8)	(7-9)		<b>(HS)</b>



**Fig. (4): Fetal APGAR score at one and five minutes of the studied groups**

There was high strong significant correlation between the placental site and haematocrite value. **Figure (5)**



**Figure (5): Correlation between placental site and haematocrite value.**



**Table (5): Comparison between the studied groups as regard complications and blood products use:**

Variable	Placenta previa group (n=16)		Control (n=16)		t-test	P value
Preop-ES						
Mean ± SD	2.3±0.3		0		30.6	<0.001 (HS)
FFP						
Mean ± SD	1.4±0.4		0		14	<0.001 (HS)
Postop-ES						
Mean ± SD	1.0±0.3		0		13.3	<0.001 (HS)
FFP						
Mean ± SD	0.3±0.01		0		120	<0.001 (HS)
	No.	%	No.	%	$\chi^2$	P value
Complications:						
Yes	8	50.0	0	0.0	Fisher test	<0.05
No	8	50.0	16	100.0		(S)

There was high significant difference between the two studied groups as regard blood product use.  
There was significant difference between the two studied groups as regard complications table (4).

**Table (6): Post operative complications among the placenta previa group:**

Variable	Placenta previa (n=16)	
	No.	%
-Obstetric hysterectomy	0	0.0
-Bladder injury	1	6.25
-Bowel injury	0	0.0
Prematurity	2	12.5
Admission to NICU	7	43.75
Wound infection	0	0.0

This study showed that most prevalent complication was admission to NICU by a percent of 43.75% followed by prematurity by a percent of 12.5% then bladder injury by a percent of 6.25% table (6).

#### IV. Discussion

The placenta is a pivotal feto-maternal organ with both embryonic (chorion frondosum) and maternal (decidua basalis) parts. The advancement of the placenta starts with the implantation of the blastocyst into the maternal Uterus and it advances all through the pregnancy. Toward the finish of the principal Trimester of pregnancy, the maternal blood supply to the placenta is complete. The placenta has various and complex, formatively Essential capacities, for example, sustenance, discharge, and immunologic and Endocrine capacity<sup>[5]</sup>.

In this way, an ordinary improvement of the placenta is significant for an uneventful Embryonic and fetal advancement. Thus, the Placenta variations from the norm can run from auxiliary peculiarities, to capacity issue, to site of Implantation anomalies<sup>[5]</sup>.

**Lal and Hibbard**,<sup>[6]</sup> showed that there were expanded in mortality in neonates destined to ladies with known placenta previa at term. Different agents, be that as it may, have reported no change in perinatal mortality<sup>[7]</sup>.

Different examinations uncovered no distinctions in development between control populaces without placenta previa and ladies with placenta previa<sup>[8]</sup>. As the pervasiveness of cesarean conveyance is rising, and along these lines, the plausibility of expanding quantities of ladies with placenta previa, it is imperative to obviously characterize the complexities, both maternal and neonatal, that are related with this determination. Past specialists contrasted their previa cases with the all-inclusive community, so it isn't astounding that stamped increments in inconveniences were noted<sup>[6]</sup>.

In the present investigation, there was non-huge distinction between the considered gatherings as respect statistic information including mean maternal age ( $32.5 \pm 4.5$  and  $30.4 \pm 5.2$  years) separately, number of past C.S go (1-2) in placenta previa gathering and (0-1) in control gathering, gravidity extend (1-4) in placenta previa gathering and (1-5) in control gathering and equality run (1-2) in each gathering.

**Daglar et al.,**<sup>[4]</sup> detailed in their planned case-control study performed in a tertiary level maternity medical clinic. Thirty-seven pregnant ladies determined to have front PP (study gathering) and 37 ladies without PP (control gathering) included into the investigation, saw that there was no noteworthy contrast between his contemplated gatherings as respect statistic information including mean maternal age ( $32.7 \pm 4.7$  and  $30.6 \pm 5.1$  years) individually, number of past C.S, gravidity and equality.

**Alsammani et al.,**<sup>[9]</sup> who led a forthcoming enlightening investigation of 52 singleton pregnancies with PP, the examination was led at Sohag University Hospital, Egypt from January through June 2014. Result found that the mean age ( $\pm$ SD), gravidity, equality, number of past cesarean conveyances (CD), and the normal number of ANC were  $30.9 \pm 3.68$  years,  $3.8 \pm 3.84$  conveyances, and  $2.6 \pm 1.1$ ,  $2.15 \pm 1.4$  and  $5.3 \pm 1.3$  visits separately

In an examination by **Lal and Hibbard,**<sup>[6]</sup> patients with placenta previa at the hour of conveyance were incorporated maternal and neonatal variable were contrasted with the control gathering of ladies experiencing cesarean conveyance without previa established and found no distinction in gravity and equality between the two gatherings. .

In the present examination fundal placenta was in half cases, foremost 31.25% and back 18.75% of cases. These results were in concurrence with **Chhabra, et al.,**<sup>[10]</sup> who led his investigation 801 ladies, 200 (25%) had predominantly front placenta, 123 (15.4%) back, in 322 (40.2%) real part was fundal, and, the remainder of placenta was in the lower some portion of the uterus. **Zia,**<sup>[11]</sup> who expressed that fundal placenta was the commonest then foremost then back placenta.

In the present investigation there was no critical distinction between the contemplated gatherings as respect maternal anthropometric measures, mean weight was ( $75.4 \pm 11.9$  and  $78.1 \pm 14.2$ ) kg in placenta previa and control individually., mean stature ( $161.8 \pm 5.4$  and  $161.7 \pm 5.7$ ) cm separately. Also, BMI ( $28.8 \pm 4.7$  and  $29.9 \pm 5.7$ ).

**Daglar et al.,**<sup>[4]</sup> delineated that there was no critical distinction between the examined gatherings as respect maternal anthropometric measures (weight, stature and BMI).

**Alsammani et al.,**<sup>[9]</sup> found that mean stature of placenta previa moms was  $157.1154 \pm 7.18292$  against Lal And Hibbard, 2015 found that pregnancy weight and BMI were essentially lower in the placenta previa gathering.

The present examination showed that there was high significant distinction between the two considered gatherings as respect birth weight and there was no noteworthy contrast between the two contemplated bunches as respect gestational age, NICU confirmation and newborn sex.

This comes in steady with what was shown by **Daglar et al.,**<sup>[4]</sup> who expressed that there was no critical contrast between the two examined bunches as respect gestational age and newborn sexual orientation. Be that as

it may, there was distinction in the quantity of NICU confirmation as there is a noteworthy contrast in the two considered gatherings.

Additionally, **Lal and Hibbard**,<sup>[6]</sup> and **Nørgaard et al.**,<sup>[12]</sup> detailed that percent of NICU affirmation in placenta previa was 39.2% and 38.1% , separately.

**Alsammani et al.**,<sup>[9]</sup> showed that solitary 17% of placenta previa infants were admitted to NICU.

Despite what might be expected **Jang et al.**,<sup>[2]</sup> inferred that there was no huge distinction between the placenta previa and control bunch as respect fetal weight.

In our examination there was huge distinction between the contemplated gatherings as respect hemoglobin level before activity. Additionally there was critical contrast between the two considered gatherings as respect hemoglobin level after activity.

Likewise our investigation demonstrated that there was high huge contrast between hemoglobin levels when activity in the placenta previa gathering.

This was in concurrence with what expressed by **Daglar et al.**,<sup>[4]</sup> who outlined that there was no critical connection between the examined gatherings as respect hemoglobin level before activity. Likewise there was no noteworthy distinction between the two contemplated bunches as respect hemoglobin level after activity.

**Jang et al.**,<sup>[2]</sup> revealed that there was no huge connection between the contemplated gatherings as respect hemoglobin level before activity. Additionally there was no noteworthy contrast between the two examined bunches as respect hemoglobin level after activity.

Our examination demonstrated that there was high noteworthy contrast between the placenta previa gathering and the control bunch as respect fetal haematocrite esteem which was higher among placenta previa group.

This was in concurrence with what expressed by **Daglar et al.**,<sup>[4]</sup> who represented that there was high critical distinction between the placenta previa gathering and the control bunch as respect fetal haematocrite esteem which was higher among placenta previa gathering.

**Lal and Hibbard**,<sup>[6]</sup> were against us as they discovered that there was high huge distinction between the placenta previa gathering and the control bunch as respect neonatal paleness which was higher in placenta previa.

**Chhabra, et al**<sup>[10]</sup> inferred that hypertensive issue were 2.5% (5/200) with foremost, 20.5% (66/322) with fundal, and with back placenta 9.8% (12/123); Placental unexpectedness 2.5% (5/200) with front, 6.8% (22/322) with fundal, and 3.3% (4/123) with back. what's more, expressed that there was no huge contrast among the three gatherings on preterm birth event.

The present investigation showed that there is no noteworthy connection between placental site in charge gathering and fetal result.

This was in concurrence with **Zia**,<sup>[11]</sup> who expressed there was no huge contrast in gestational age during childbirth, mean BW and Apgar scores.

In the present investigation 62.5% of placenta previa was foremost and 37.5% was back.

This was against Ibrahim &Farag<sup>[13]</sup>who led his investigation on 324 pregnant ladies 62 cases (19.13%) with front and 262 cases (80.87%) with back placenta previa.

Information spoke to demonstrated that the Apgar score at 1 min was  $7.2\pm1.5$  and at 5 min  $8.55\pm0.52$  in front placenta previa and at 1 min was  $7.0\pm1.55$  and at 5 min  $8.9\pm0.31$  in back placenta previa.

This was in concurrence with Ibrahim &Farag<sup>[13]</sup>found no huge contrasts in the Apgar scores  $<7$  at 1 min and 5 min between the foremost and back placenta previa gatherings.

The present examination demonstrated that there was critical distinction between the two contemplated bunches as respect Apgar score at one moment. Likewise there was high critical contrast between the two contemplated bunches as respect Apgar score at five moment.

**Daglar et al.**,<sup>[4]</sup>concur with the present examination that there was high critical distinction between placenta previa and control bunches as respect Apgar score at five moment.

Additionally, **Lal and Hibbard**,<sup>[6]</sup>revealed that was high huge contrast between placenta previa and control bunches as respect Apgar score at five moment.

On the opposite side **Jang et al.**,<sup>[2]</sup> detailed that there was no noteworthy distinction between the placenta previa and control neonates as respect Apgar score $<4$  in 1 and 5 minutes.

**Matsubara et al.**,<sup>[14]</sup>saw that there was no noteworthy contrast between the examined gatherings as respect APGAR score at one and five minutes. Likewise, **Nørgaard et al.**,<sup>[12]</sup> revealed that there was no critical contrast between the placenta previa and control neonates as respect APGAR score5 minutes  $<7$ .

The result demonstrated that the most predominant intricacy was admission to NICU by a percent of 43.75% pursued by rashness by a percent of 12.5% then bladder damage by a percent of 6.25%.

**Daglar et al.**,<sup>[4]</sup>concurred with us when they represented in their investigation that there was high huge contrast between the two considered gatherings as respect blood item use. However, they saw that there was noteworthy contrast between the two examined bunches as respect difficulties.

**Lal and Hibbard**,<sup>[6]</sup> saw that that there was high noteworthy contrast between the two contemplated bunches as respect blood item use and complexities.

**Alsammani et al.**,<sup>[9]</sup> watched huge increment in maternal inconveniences related with placenta previa incorporate cut off obstetric drain, maternal stun, blood transfusion crisis hysterectomy, disease and thrombophlebitis.

Our investigation demonstrated that there was high critical connection between's the placental site and haematocrite esteem.

**Daglar et al.**,<sup>[9]</sup> concurred with us when they referenced that umbilical CB Hct levels were factually fundamentally higher in the PP patients contrasted and controls.

In this examination there was no huge relationship between's the fetal hemoglobin and maternal hemoglobin. **Danish et al.**,<sup>[4]</sup>watched no huge relationship among's moms and line blood hematological parameters.

## V. Conclusion

Placental area can decide pregnancy outcome. Ultrasound imaging has turned into an indispensable segment of routine pre-birth medical consideration for most pregnant ladies. USG of placenta is fundamentally coordinated to ward deciding the area of the placenta and distinguishing its variations from the norm in the later long stretches of pregnancy.

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